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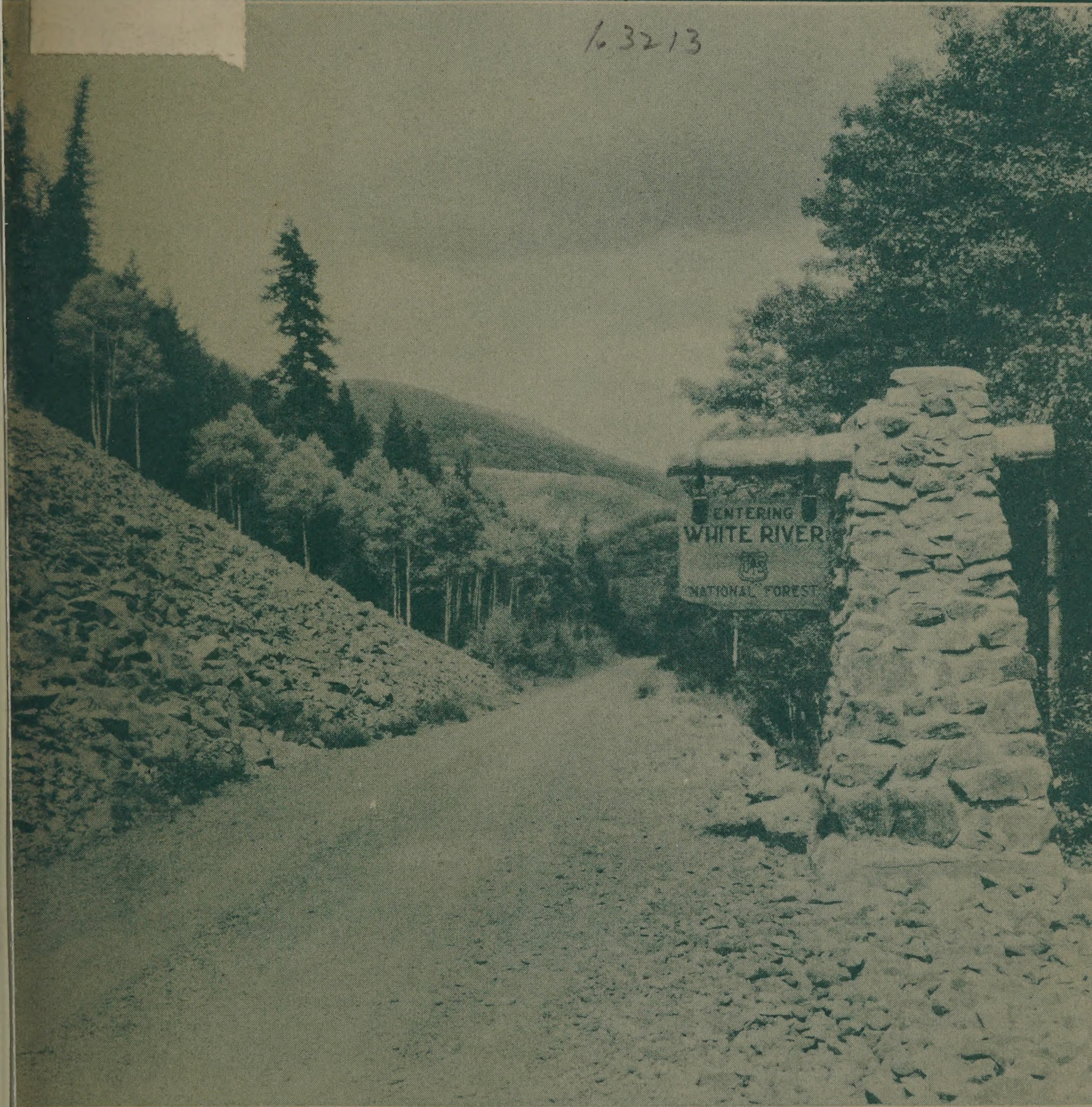
WHITE RIVER NATIONAL FOREST

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White River National Forest

Colorado

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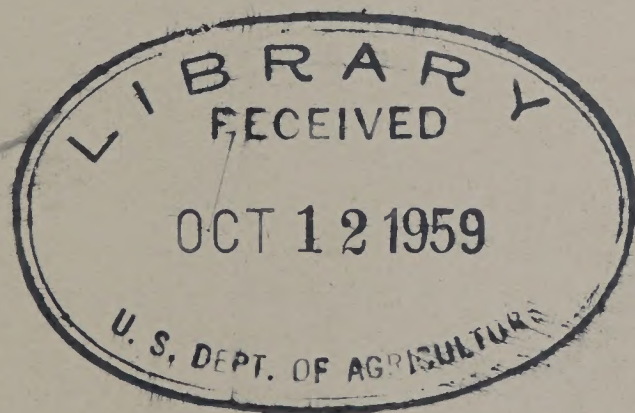
ROCKY MOUNTAIN REGION

DENVER, COLORADO



COVER PHOTO.—*Entrance portal on the North Fork*

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UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1941



Sweetwater Lake combines scenic beauty and good fishing.

F-355386

The White River National Forest

WHITE RIVER NATIONAL FOREST, or White River Plateau Timberland Reserve, as it was then designated, was established October 16, 1891, by proclamation of President Benjamin Harrison. This was the first national forest to be placed under technical forest administration in Colorado and the second in the United States; the Yellowstone Park Timberland Reserve in Wyoming—now the Shoshone National Forest—being the first. The forest is located in the northwestern part of the State and takes its name from the White River, one of its principal drainages. On June 30, 1940, the forest contained 918,181 acres, of which all but 22,842 acres were Government land.

White River National Forest is divided into five districts, each of which is administered by a ranger, under the general direction of the forest supervisor. The rangers live at stations within the forest during the summer months and at the headquarters towns in the winter. They are busy with timber sales, range management, and various duties, but may usually be consulted by prearrangement. Information may be secured from forest officers at the addresses given below:

Forest Supervisor, Glenwood Springs, Colo.

Forest Ranger, Glenwood District, Glenwood Springs, Colo.

Forest Ranger, Burro Mountain District, Buford, Colo.

Forest Ranger, Williams Forks District, Willow Creek, Colo.

Forest Ranger, Burns Hole District, Yampa, Colo.

Forest Ranger, Sleepy Cat District, Meeker, Colo.

WHEN THE COUNTRY WAS NEW

None of the early explorers and few, if any, of the early fur traders set foot on the present forest area. The expedition of the Spanish padres, Escalante and Dominguez, in 1776 was the first approach of white men to the northwestern section of Colorado. They passed southwest of the forest on their westward journey from the Uncompahgre Valley toward Utah.

In 1845, Capt. John C. Fremont passed northeast of the forest, and in 1858, Capt. John W. Gunnison followed the general route taken by the Spaniards 82 years previously.

Before the treaties of 1863 and 1868 between the whites and the Indians, the entire western slope of Colorado, including the White River Plateau, was the home and hunting ground of the Confederated Ute Indian tribes. The Utes were a warlike people, and occupation by white men of the country not included in the treaties caused many conflicts. Eventually, the Indian Confederacy was forcibly broken up by the whites, and the three divisions of the Ute tribes were confined to separate reservations. The Northern Ute Indian Reservation comprised a vast region, including the area of the present White River Forest.

The boundaries of this reservation had been fixed under terms of a treaty negotiated by Governor Hunt, of Colorado, in 1868, which also provided for the establishment of an Indian agency near the northwest corner of the present national forest. The agency was established in the early seventies a short distance from the present town of Meeker, under the direction of Gen. Charles Adams, acting as agent. He was followed in turn by J. S. Littlefield, E. H. Danforth, and N. C. Meeker, as agents.

Previous to his appointment, Meeker had been closely associated with Horace Greeley, and had founded the town of Greeley in northeastern Colorado. He is most widely known, however, as the tragic, central figure and victim of the unfortunate Indian uprising which resulted in the Meeker Massacre. Being a man of high ideals, strong religious faith, and courageous determination, he sought to change the Utes almost overnight from their traditional practices of hunting and war dancing, into a peaceful race of farmers. He did not understand the Utes, nor they him, and in the conflict of wills which followed, one could not sway the other.

When Meeker caused the Utes' race track at the agency to be plowed up, the Indians were incensed and started the war dances, which usually preceded an Indian uprising. Meeker, anticipating serious trouble, asked the Government for protection. Major Thornburgh, with a troop of cavalry, was immediately dispatched from Fort Steele, near Rawlins, Wyo. Learning of their approach, on September 29, 1879, the Utes, under Chiefs Jack and Colorow, ambushed the soldiers near Milk Creek, 25 miles from the agency.

Thornburgh was killed, and the troop was almost annihilated before reinforcements arrived and drove off the Indians. The reinforcements sent to relieve Thornburgh had been summoned by a scout named Joe Rankin, who made his way through the Indian lines on the first night of the siege and in 28 hours rode to Rawlins, 160 miles distant. This ride was and still is an epic in the history of the West.

At the same time, other Utes, under Chief Douglas, had attacked the agency, killed Meeker and 11 other men, and carried 3 women and 2 children away as captives. Charles Adams, of Denver, former acting White

River agent, was sent immediately to the scene of the trouble, and with the help of Ouray, Chief of the Uncompahgre Utes and ranking chief of all the Ute tribes, secured the release of the prisoners and assisted in quieting the rebellion.

A fitting monument to Meeker and his men, erected by the citizens of Rio Blanco County, stands today near State Highway 13, about 3 miles southwest of the town of Meeker, and a granite obelisk, erected by the Government to the heroes of the Thornburgh battle, marks the site of that encounter near the northwest corner of the White River National Forest.

Following these troubles, the Northern Utes were subjugated by the Government and banished to a reservation in Utah, and settlement and development of the White River country began.

Late in the fall of 1881, two prospectors from Leadville found surface indications of carbonate ore in the vicinity of Deep Lake, about 22 miles north of the present site of Glenwood Springs. Early in 1882, they returned with friends and staked claims. Over 2,000 men followed them into the area, laid out a town site, and started mining operations.

The camp was called Carbonate, and it was immediately declared the seat of Garfield County, which had been founded in 1882. Failing to find ore values worth mining, most of the prospectors left the camp before

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Beauty and majesty in Glenwood Canyon.

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F-355393

Crystal waters mirror the wooded shore of Trappers Lake.

winter, and the county records were moved to Glenwood Springs. This was the only mining “boom” of the Flat Tops country, and Carbonate is today one of Colorado’s many “ghost” towns with only a few prospect holes to show that it ever existed.

HIGHWAYS, ROADS, AND TRAILS

The forest is easily accessible from two transcontinental United States highways. One of these, U S 6 and 24, passes through the southern end of the forest and Glenwood Springs, where the forest headquarters is located. The other route is U S 40 which passes north of the forest in the Yampa River valley. These two main arteries are connected by several minor routes passing through or near the forest. The principal one of these is State Highway 13, which is a north-south road passing west of the forest and through the town of Meeker. The forest may be entered over the New Castle-Buford Road, running from New Castle, on U S 6 and 24, to Buford in the upper White River country; from Meeker over State Highway 132; from Hayden or Craig by way of Williams Fork River Road, and by a

number of roads leading off State Highway 131 east of the forest. From these main traveled roads there are a number of old roads leading into less accessible regions. For the hardier traveler who wishes to visit the more inaccessible parts of the forest, there are many suitable trails built and maintained by the Forest Service.

CONSERVING THE RESOURCES

The White River Forest is rich in resources—timber, forage, water, wildlife, and countless scenic attractions, all of which are administered under the multiple-use system of land management followed by the Forest Service in the national forests. Under this system, all resources are for use. Thus, a given area, such as a ranger district, may supply lumber for local industries; forage for domestic livestock and game animals; water for domestic use and irrigation; hunting, fishing, and camping for the visitor; and many other needs. All these forms of use are correlated and controlled so that no single resource suffers because of use of the others. Outstanding scenic or recreation areas are administered so that other uses will not impair their recreational values. Timber is harvested where the cutting does not impair other values; and grazing of the forage crop is allowed, except where restrictions are necessary because of conflict with other forms of use.

All resources of the forest are utilized under the basic concept of sustained yield. That is, the products of the forest are harvested under approved conservation principles for the maximum annual return consistent with the available supply and other uses. With timber, this means cutting a volume of wood products each year which is less than the total annual growth of the timber stand. With the forage resource, it means the conservative use of the range, so that the vegetative cover will not be reduced to the detriment of the land.

RECREATIONAL USE AND VALUES

The White River Forest is unusually free of man-made structures, and is of particular interest to the visitor who is seeking a primitive environment. Its many streams and lakes are stocked with native, rainbow, and eastern brook trout. Its forests shelter many deer, elk, and other forms of wildlife. Its high alpine plateau possesses appeal and charm that are inspirational and restful. Because of these attractions visitors in ever-increasing numbers are coming to the White River each year for rest and recreation. Many forms of recreation are available, including hunting, fishing, camping, and riding. Pack trips into the more isolated parts of the forest may be arranged by the hardier individuals, while those



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Campfire circle at Grizzly Picnic Grounds.

who desire comfort may make satisfying trips by automobile to attractive camp sites.

Camps, Picnic Grounds, and Resorts.

Of the thousands who annually visit the forest for camping or other recreation, a large proportion come by automobile. To meet their needs, the Forest Service has developed camp and picnic grounds at convenient locations near points of interest and adjacent to roads. Other sites have been improved along the more heavily used trails. Rustic tables, fireplaces, and suitable sanitary and fire prevention facilities are provided at these campgrounds, for the use of which no charge is made. The locations of these campgrounds are indicated by symbol on the map and descriptions of them are given below. Additional campgrounds have been planned and will be installed as the need for them arises.

GRIZZLY CREEK PICNIC GROUND.—On US 6 and 24, 7 miles east of Glenwood Springs. Outstanding scenery of the Colorado River and Grizzly Creek canyons.

RIFLE CREEK PICNIC GROUND.—On county road, approximately 20 miles northeast of Rifle. Beautiful stream, box canyon, and fishing.

CLARK CABIN CAMPGROUND.—Forty miles north of New Castle on road to Buford. Wild game, timber, and livestock grazing.

SOUTH FORK CAMPGROUND.—Ten miles southeast of Buford at end of road on South Fork of White River. Interesting cave nearby. Trails for hiking into primitive wilderness. Excellent stream fishing.

MARVINE CREEK CAMPGROUND.—At end of Marvine Creek Road, 5 miles from North Fork White River Road, turn off at Twin Springs resort. Wonderful scenery, wild game in its native habitat, and good fishing at beautiful Marvine Lakes, 7 miles distant by trail.

LOST CREEK CAMPGROUND.—Thirty-one miles east of Meeker on North Fork of White River Road. Good stream fishing.

NORTH FORK CAMPGROUND.—Thirty-four miles east of Meeker on North Fork of White River Road. Good stream fishing.

RIPPLE CREEK CAMPGROUND.—Near the junction of the North Fork of White River Road and the Ripple Creek Road leading to the Williams Fork country. Forty-one miles east of Meeker. Fishing, wild game, and beautiful scenery. Within hiking distance of Pagoda, Sable, and Mirror Lakes.

SKINNY FISH CREEK CAMPGROUND.—Forty-eight miles east of Meeker on North Fork of White River Road. Close to Trappers Lake, within hiking distance of Skinny Fish Lake. Excellent fishing in streams and lakes, varied and beautiful scenery, and wild game.

TRAPPERS LAKE CAMPGROUND.—Fifty miles east of Meeker on White River Road, and one-fourth mile from Trappers Lake, the largest and most beautiful lake on the forest at the edge of the Flat Tops. Wonderful

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The Amphitheatre at Trappers Lake.

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scenery. Easy hiking distance to Little Trappers Lake. Saddle horses may be rented for trips to Wall Lake, Fraser Lake, Chinese Wall, the Devil's Causeway, and other scenic attractions. Good fishing in many nearby lakes, wild game, boating on Trappers Lake.

POOSE CREEK CAMPGROUND.—On Ripple Creek Road, 12 miles from North Fork of White River Road and 16 miles from Willow Creek Post Office south of Hayden. Close to spur road from which Lost Lakes may be reached by foot or saddle horse. Scenery, livestock grazing, and hiking trails.

TROUT CREEK PICNIC GROUND.—On county road, about 12 miles southwest of Oak Creek; a good picnic spot.

LITTLE OAK CAMPGROUND.—At Chapman Reservoir, 15 miles southwest of Oak Creek. Restful scenery and good fishing. Passable road.

CROSHO LAKE CAMPGROUND.—On county road, 9 miles northwest of Yampa. Big fish and boating at Crosho Lake. Restful forest scenery.

STILLWATER CAMPGROUND.—Thirteen miles southeast of Yampa on the Bear River Road. Good fishing, beautiful scenery, livestock grazing, hiking on forest trails to nearby lakes and peaks.

SWEETWATER CAMPGROUND.—Twenty-four miles via county road, northwest of Gypsum on the edge of Sweetwater Lake, a large lake abounding with rainbow and brook trout. Beautiful scenery. Saddle horses may be rented for trips to Deep Lake and many other back-country lakes and streams.

In addition to the campgrounds listed, a number of others have been developed, principally in the back country, away from roads. In many ways, these more inaccessible campgrounds are more attractive than are those on roads, as they are used by fewer people and offer greater seclusion. Also, fishing is usually better where use is lighter.

Seven resorts authorized on the forest under Forest Service permits, in addition to a number of resorts and cabin camps on private land within or near the forest, furnish accommodations for the public. Most of these have horses and pack outfits to take visitors into the back country.

Flat Tops Wilderness Area.

The White River Plateau in the high central portion of the forest, ranging in elevation from 8,500 to 11,950 feet and known as the Flat Tops, has long been noted for its recreational attractions. It is rolling plateau country, with many spruce-fir stands interspersed with grassy parks. The plateau is dotted with numerous excellent fishing lakes, and the many streams which rise on the Flat Tops break over the rim of the plateau into deep, rugged, and beautiful canyons. Here and there over the area are



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A forest ranger looks over the high Flat Tops.

high mountain peaks ascending well above the general level of the plateau, from which the climber may have extensive views of the scenic tableland. The variety and everchanging beauty of topography and floral cover and the abundance of deer and elk provide a continual succession of thrilling anticipations and breath-taking realizations.

In order to preserve this beautiful country in its natural state, the Forest Service has banned roads, resorts, or other works of man, and has designated it as the Flat Tops Wilderness Area. Here, future generations may travel and camp as did the pioneers and the Utes, and ride, hunt, and fish, or simply relax and enjoy the scenic beauty without interruption by automobile or other disturbing element of modern life. It is planned to preserve primitive conditions as completely as possible, with only such improvements as are necessary to protect and administer the area.

The numerous lakes within the area include Marvine, Twin, Wall, Oyster, Little Trappers, and Island, each a gem in a matchless setting. The Amphitheatre, the Chinese Wall, and the Devil's Causeway are a few of the geological features which will appeal to those who are interested in the earth's construction.

In 1940, the American Forestry Association sponsored an expedition of the Trail Riders of the Wilderness into the Flat Tops Wilderness Area. Because of the enthusiasm of the Trail Riders over the charm, scenic beauty, flora, fauna, and recreational opportunities of the high plateau, this area has been selected by the American Forestry Association for an annual trip.

Other Unusual Recreational Features.

Surrounding the wilderness area are many other spots of rare beauty, more or less accessible by automobile, where people without the time or



Speckled beauties from Trappers Lake.

means to visit the Flat Tops can find inspiration and satisfaction in surroundings only slightly less primitive.

Trappers Lake is one of the largest and most attractive lakes in Colorado. Sweetwater Lake, equally charming in its mountain setting on the east side of the White River Plateau, amply repays the visitor for the trip over a secondary road. There are many lesser lakes within easy hiking distance of roads and well worth the effort required to reach them.

Another exceptional scenic feature of the forest is Glenwood Canyon of the Colorado River near Glenwood Springs. U S 6 and 24 as well as the Denver & Rio Grande Western Railroad flank the river the entire length of this canyon. Its nearly sheer walls of vari-colored rocks rising to heights of more than 2,000 feet are an inspiring sight which the traveler will long remember.

FISH AND WILDLIFE

The area now included within the White River National Forest was from time immemorial a favorite and bountiful hunting ground for the Ute Indians and the white settlers who followed them. Many famous nimrods, including Theodore Roosevelt and Zane Grey, have hunted there. It is still the finest big-game hunting area in Colorado, and one of the best in the West. For about 36,000 mule deer, nearly 3,000 elk, 500 black and brown bears, a few mountain sheep, and great numbers of coyotes, beavers, muskrats, and other fur bearers, the forest is a natural habitat. On the basis of these figures, the White River Forest contains nearly 20 percent of

the total deer population of the State and more than 10 percent of the elk population.

The forest is also justly famed for its fishing. Its many streams and lakes abound with fish, and are kept stocked by the Colorado State Game and Fish Department, with the cooperation of forest rangers, local sportsmen's clubs, and interested individuals. Trappers Lake is famous as one of the last strongholds of the beautiful Colorado River cutthroat trout.

The Forest Service objective in wildlife management is to secure the greatest production for the purposes of recreation and sport consistent with timber, forage, water, and other resource uses and values. Generally, the concentration of game animals on the White River is commensurate with available forage, but where over-concentration occur, plans are made in cooperation with the State game authorities to restore the balance through variations in hunting seasons and in encouraging hunter effort in those areas. Normally, hunters are restricted to taking only deer and elk having antlers, since a large portion of the males can be harvested without reducing the rate of reproduction, but where serious problems of over-concentration occur, it is necessary to reduce the size of the breeding herd, and this can be done only by the removal of females or animals without antlers. This method of control is used only where plant and soil resources are being destroyed and after other methods of control have failed. The removal of surplus animals by a hunter harvest of both sexes is vastly preferable and more humane than removal through starvation and disease, [11] which is Nature's method of balancing game populations with available forage.

Deer can often be seen along the roads, and occasionally good photographs may be obtained. They are comparatively tame in the early summer, but as the hunting season approaches they become more wary. Elk usually range farther away from man-made improvements and habitations, but can often be seen by horseback parties.

Hunters and fishermen who come to the forest usually get game and fish. All sportsmen are urged to observe the bag limits and to cooperate with the State game wardens and forest officers to prevent game law violations.

F-234378

Deer grazing at Grizzly in the Brackney orchard, Glenwood Canyon.





F-381659

A beaver crossing a ridge between waterways.

THE TIMBER RESOURCE

The timber resource of the forest is one of its most valuable assets, the merchantable timber stand being estimated at nearly 4,000,000,000 board feet of saw timber. About 81 percent of this great stand is Engelmann spruce, 8 percent lodgepole pine, 7 percent alpine fir; and the remainder, Douglas-fir, blue spruce, and ponderosa pine.

Timber sold from the forest is cut in accordance with management plans prepared by professional foresters, with the object of perpetuating the supply and removing only the maximum annual yield in accordance with approved sustained yield practices. Every tree to be cut is selected and marked in advance by a forest officer. Mature trees or those which are deteriorating because of age, disease, insect attack, overcrowding, or other causes are chosen. This selection leaves healthy young trees and sufficient seed trees to insure a fully stocked future stand.

Approximately 2,500,000 board feet of mature timber are cut and sold each year from the White River Forest. Receipts from timber sales as well as revenue from other sources are paid into the national treasury. Twenty-five percent of this money is then returned to the counties in which the national forest is located, in lieu of taxes, to be used for public school

and road purposes. An additional 10 percent of receipts is made available to the Forest Service for the construction and maintenance of roads and trails.

WATERSHED PROTECTION

Each year a deep blanket of snow accumulates on the White River Plateau. With the approach of spring the snow begins to melt. Part of the water goes into the soil and is stored as ground water which feeds the springs and streams throughout the year, and the remainder flows off in the form of surface water. A good forest cover serves materially in preventing the rapid melting of the snow blanket, retards run-off of surface water, and increases the amount of water which percolates into the soil.

Too rapid run-off and accelerated erosion on a watershed can be controlled by proper management. The roots of plants and trees help to bind and stabilize the soil and at the same time make it more pervious so that the surface run-off is less and the amount of water stored is increased. A forest with small openings, such as those in a scientifically cut-over forest, provides more water than a dense stand, since there is less interception of rain and snow by the trees and less evaporation.

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Virgin forest around Himes Peak.

F-355390





F-355418

The White River Forest yields logs and poles for local use.

Forage crops grown on the surrounding valley ranches to provide winter feed for the large herds of stock grazed on the forest during the summer months, are dependent almost entirely on irrigation water which flows from the White River National Forest. Glenwood Springs, Meeker, Oak Creek, Yampa, and other adjacent small towns and communities depend upon water from the forest for domestic use, and Glenwood Springs receives electric power from Noname Creek.

FORAGE FOR LIVESTOCK

Livestock raising is the principal industry of northwestern Colorado, and the White River National Forest which provides a large part of the summer range in this area is an essential factor in the economic structure of that part of the State. In many cases, livestock production is the only source of income of communities adjacent to the forest.

During the last five years, the White River Forest has furnished summer range for an average of 28,600 cattle owned by 207 stockmen, and 94,200 sheep owned by 71 stockmen.

All grazing on the forest is under the supervision of trained forest officers. Grazing privileges are distributed under a plan designed to support the



F-355410

Himes Peak and North Fork of White River.



F-159725

Cattle find good pasture on White River ranges.

greatest possible number of economic home units. Forest officers not only restrict the number of stock and period of use to the safe carrying capacity of the range, but confer with the permittees with regard to the distribution of stock, placing of salt, construction of range improvements, and all general policies affecting the range.

Compliance with sound principles of range management are required. Salting cattle on areas they do not naturally use, to secure a more even utilization of feed, and open herding of sheep, with bedding limited to one night on the same area to avoid unnecessary trampling of forage, are better practices of present-day administration. Also, the too early use of the range, one of the main causes of overgrazing, is prohibited. Most stockmen realize that better forage conditions benefit the stock-raising industry and cooperate with forest officers in the preservation and up-building of the range resources.

FIRE IN THE FOREST

About the time the Utes were banished from the White River country, large and disastrous fires swept over extensive areas. These fires are said to have been set by the Indians, either to spite the white men or to drive the game from the country. Extensive stands of fine timber were completely destroyed, and the scars are still visible. These and earlier fires

account for the extensive areas of aspen and brush cover on the forest. In most of these aspen stands, charred stumps and logs of pine and spruce give mute testimony to the change in cover type.

During the past 32 years, under organized fire protection, 171 fires burned 779 acres of national-forest land, an average of about 25 acres a year. This is not a large loss in itself, but it necessitated the expenditure of large sums of money for preparedness for fire, for fire-fighting equipment, for fire suppression, and for time lost from other activities. Continual precaution and preparedness is the price of safety. Eight-three percent of these fires were caused by human carelessness, and hence could easily have been avoided.

While the White River has been fortunate, so far, in the extent of its fire losses, critical conditions are experienced every year during which a fire once started in a dangerous or inaccessible location would rapidly develop into a conflagration with disastrous loss in timber, domestic stock, fish and game, watershed values, and even in human life.

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Sheep graze in the mountain meadows of the White River Forest.

F-355402



Forest officers are desirous of keeping down fire losses, and local residents, acting as fire wardens or cooperators, collaborate with them in a systematic plan of fire prevention and suppression. With areas of from 150,000 to 250,000 acres to supervise, forest officers need such cooperation: Otherwise they could not handle the situation. All forest users are urged to cooperate by extinguishing their camp fires and any small fires found and by notifying a forest officer whenever a smoke or a fire is seen in the woods.

TREES OF THE WHITE RIVER

Conifers.

PINES.—Four species. The pines have their needles gathered together at the base in bundles of from two to five. The cones are woody and pendent.

LIMBER PINE (*Pinus flexilis*).—Needles are fine, almost silky, dark green, $1\frac{1}{2}$ to 3 inches long, always in bundles of five. Cones are 3 to 10 inches long, with seeds one-third inch long; scales smooth. Bark is light gray or silvery white, except on old trunks, which are blackish brown and furrowed.

PONDEROSA PINE (*Pinus ponderosa*).—Needles are 4 to 7 inches long, deep green, usually grow three in a bundle but sometimes two, and in tufts at the ends of the branches. Cones are 3 to 6 inches long, and the scales are armed with spines. When young, the bark is dark and the tree is often called "blackjack" or "bull" pine. When older, the bark is yellowish in thick scales.

LODGEPOLE PINE (*Pinus contorta*).—Needles are 2 to 3 inches long, yellow green, growing in bundles of two. Bark is thin. Cones are one-sided, $1\frac{1}{2}$ to 2 inches long, and cling to the branches for years without opening or dropping their seeds. Cone scales are armed with short spines. This species is used mostly for railroad ties, mine props, and telephone poles.

PINON OR PIÑON PINE (*Pinus edulis*).—Piñon is confined to the foothills. Needles grow $\frac{3}{4}$ to $1\frac{1}{2}$ inches long, in clusters of two and, rarely, of three. Cones are $1\frac{1}{2}$ inches long and almost as broad. The large seeds are the common pinon nuts of trade.

SPRUCE.—Two species. Needles are scattered over the twigs singly; sharp-pointed, four-sided, leaving twigs rough like a grater when they fall off. Cones are pendent with parchmentlike scales, falling off the tree whole.

ENGELMANN SPRUCE (*Picea engelmannii*).—The new-growth twigs are covered with soft, short hair. Needles are less rigid and less sharply pointed than those of blue spruce, green, dark blue, or pale steel blue. Cones are 1 to 2 inches long. Bark is dark, reddish brown, and separates



F-399507

Trail Riders of the Wilderness.

in the form of small, rounded scales. Main trunk, in contrast to blue spruce, is smooth and clean.

BLUE SPRUCE (*Picea pungens*).—The new-growth twigs are always smooth. Needles are stiff with sharp points, varying in color from silvery blue to green. Cones are from $2\frac{1}{2}$ to 5 inches long, averaging twice the length of Engelmann spruce cones. Bark of mature trunks is gray and deeply furrowed. The main trunk always has numerous short twigs pushing out between branches.

FIRS.—Two species. Needles are blunt, flat, and soft to the touch, without any stem where they join branches; they leave flat, round scars when they fall off in contrast to short stubs left on twigs by spruce needles. Cones, unlike those of other species, stand erect. In the fall, the cones fall to pieces and leave only spikes on the branch. Buds are blunt and pitchy. Blisters, containing liquid pitch or balsam, are scattered over the smooth bark.

ALPINE FIR (*Abies lasiocarpa*).—Leaves are flat, about 1 to $1\frac{3}{4}$ inches long. Needles tend to turn upward. Cones are $2\frac{1}{2}$ to 4 inches long, dark purple.

The bark is smooth, grayish white, furrowed only where the tree approaches a foot in diameter. Tree has a sharp, spirelike crown. It usually grows mixed with Engelmann spruce.

WHITE FIR (*Abies concolor*).—Needles are longer than those of alpine fir, often 2 inches or more long. White fir grows at lower altitudes, often with ponderosa pine and Douglas-fir. Its cones are usually larger than those of alpine fir and often grayish green in color. The wood is similar to that of alpine fir.

DOUGLAS-FIR (*Pseudotsuga taxifolia*).—Although similar in name, this species has no direct relationship to the true fir. Its leaves are flat, $\frac{3}{4}$ to $1\frac{1}{2}$ inches long, with short stems that join them to the branches. Cones are pendent, with three-pronged bracts protruding from the cone scales; they are persistent and fall off the tree whole. Buds are sharp-pointed, shiny, smooth, red brown.

JUNIPERS.—Three species. The fruit is berrylike, bluish in color. The needles are merely small, green scales attached closely to the twigs, though sometimes spreading and about one-half inch long, making twigs very prickly to the touch. The trees are usually found with piñon and oak.

ROCKY MOUNTAIN JUNIPER (*Juniperus scopulorum*).—The berries are about the size of peas, the bark is scaly, the twigs are slender and graceful, and the heartwood is red. The species is distinguished from the one-seed juniper in that its berry usually has two seeds and is bluish or black. The berries mature in 2 years.

ONE-SEED JUNIPER (*Juniperus monosperma*).—The berries are small, mostly less than $\frac{1}{4}$ inch in diameter and usually contain only one seed; they are covered with a bluish bloom which may be rubbed off, exposing the true reddish or copper color. Berries of the one-seed juniper require only 1 year to mature. The twigs are stiff and stout; the heartwood is brown.

UTAH JUNIPER (*Juniperus utahensis*).—Berries one-fourth to one-third inch long. Bark ashy gray, about one-fourth inch thick, broken into long thin scales. Wood light brown, with nearly white sapwood. Berries are reddish brown, have one or rarely two seeds, mature in 2 years. A small bushy tree, rarely over 20 feet high.

Broadleaf trees.

ASPEN (*Populus tremuloides*).—The flat, nearly heart-shaped leaves are about 2 inches across; they tremble characteristically in a breeze. The bark is whitish or very pale green, smooth with black scars where branches have dropped off. The trees rarely grow more than 60 feet high.

NARROWLEAF COTTONWOOD (*Populus angustifolia*).—This is usually a tall

tree, 40 to 60 feet high. The bark is dark gray, heavily ridged half or two-thirds of the way up the tree; above that, smooth, pale green. The leaves are $\frac{1}{2}$ inch to 1 inch wide by 2 or 3 inches long, very similar to willow leaves. The species is usually found along streams at lower elevations.

ROCKY MOUNTAIN MAPLE (*Acer glabrum*).—Usually a shrub, but frequently 20 to 30 feet high, this species has paired opposite buds, sharply lobed leaves, light-gray bark, and paired, winged seed. Its leaves are 1 to 2 inches long, opposite each other.

BOXELDER (*Acer negundo*).—This tree grows low and branches freely, 25 to 40 feet high and up to 12 inches in diameter, has drooping clusters of greenish flowers. Its leaves are compound, 3 to 5 on a single stalk. Seed is paired and winged.

SCRUB OAK (*Quercus sp.*).—Usually a shrub, rarely more than 15 feet high. Leaves are alternate, smaller at the base than at the ends, with deep lobes; frequently drying on the tree and remaining over winter. The fruit is a short, pointed acorn. The species forms dense thickets at lower elevations. Often valuable for fence posts.

THINLEAF ALDER (*Alnus tenuifolia*).—The alder grows along and overhanging the streams, usually in clumps, several trees from the same root, frequently 4 to 6 inches in diameter and 15 to 25 feet high. Its leaves are large and sharply double toothed. The mature, seed-bearing fruit is cone-like and quite noticeable in winter.

WILLOWS (*Salix sp.*).—This is the common shrub of creek bottoms. Its leaves are usually narrow, sharp-pointed. Some willows attain a diameter of 4 inches and a height of 15 to 25 feet. The buds are covered by a single scale.

WESTERN CHOCKECHERRY (*Prunus demissa*).—This is a shrub, 3 to 15 feet high. Flowers and fruit are clustered. Alternate leaves are sharply pointed. Bark, leaves, and seed are bitter to taste. Fruit is black.

PACIFIC SERVICEBERRY (*Amelanchier florida*).—Leaves silvery, sharply toothed above the middle, and alternate on branches. Trees, or more often shrubs, 6 to 15 feet high. Flowers white and in clusters. Five hard seeds in each berry. Berries edible, nearly black when ripe.

WATER BIRCH (*Betula fontinalis*).—The old bark is glossy, reddish brown, and marked by pale-brown, longitudinal lenticels which often become 6 to 8 inches long and one-fourth inch wide. The old twigs are rough with many hard drops of resin. Seldom more than 25 feet high in Colorado; usually occurs in clumps; and has a graceful, almost delicate appearance.

RULES FOR HEALTH PROTECTION

1. PURIFICATION.—Mountain streams will not purify themselves in a few hundred feet. Boil or chlorinate all suspected water.
2. GARBAGE.—Burn all paper, old clothing, or rubbish. Bury or place in pits or receptacles provided, all garbage, tin cans, bottles, and other refuse.
3. WASHING.—Do not wash soiled clothing or utensils or bathe in springs, streams, or lakes. Use a container and throw dirty water where it cannot get into the water supply without first filtering through the ground.
4. SANITARY PRECAUTIONS.—Use public toilets if they are available. Where not provided, bury 1 foot deep all human excrement, at least 200 feet from water.
5. OBEYING LAWS.—Observe the rules of sanitation and protect yourself and others. Report all insanitary conditions to the nearest health or forest officer.

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FIVE RULES FOR FIRE PROTECTION

1. MATCHES.—Be sure your match is out. Break it in two before you throw it away.
2. SMOKING.—Be sure that pipe ashes and cigar or cigarette stubs are dead before throwing them away. Never throw them into brush, leaves, or needles. When in the woods smoke only in places of habitation, at improved campgrounds, or at carefully selected rest and camp sites—never while traveling.
3. MAKING CAMP.—Use fire grates at improved campgrounds and observe the rules for building and extinguishing fires. Before building a campfire at places where no grates are available, scrape away all inflammable material from a place about 4 feet in diameter. Keep your fire small. Never build it against trees or logs, or near brush.
4. BREAKING CAMP.—Never break camp until your fire is out, dead out. Stir the coals while soaking them with water, turn burned sticks and drench both sides. Wet the ground around the fire and be sure the last spark is dead.
5. BONFIRES.—Never build bonfires or burn slash or brush in windy weather or while there is the slightest danger that the fire will get away.

If you find a forest fire, put it out if you can. If you cannot put it out, report it to the forest supervisor, the ranger, the sheriff, or the nearest telephone operator. Headquarters of the supervisor and the rangers are indicated on the map and listed on page 1.
